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UNITED STATES DEPARTMENT OF AGRICULTURE  
BUREAU OF PUBLIC ROADS  
DIVISION OF AGRICULTURAL ENGINEERING

S. H. McCORMICK, CHIEF

MONTHLY NEWS LETTER

WASHINGTON, AUG. 20, 1930

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: THERE ARE BEING SENT WITH THIS ISSUE OF THE NEWS :  
: LETTER, A FEW COPIES OF STANDARD FORM NO. 1060, :  
: TEMPORARY RECEIPT, FOR USE IN CASE AGENTS DECLINE :  
: TO DELIVER FREIGHT OR EXPRESS SHIPMENTS BECAUSE :  
: YOU ARE UNABLE TO PRESENT ORIGINAL BILL-OF-LADING.:  
: . . . . .

MR. McCORMICK LEFT WASHINGTON AUGUST 3 FOR AN EXTENDED INSPECTION TRIP. HE WENT FIRST TO PULLMAN, WASH. WHERE HE MET DR. McCALL OF THE BUREAU OF CHEMISTRY AND SOILS, AND OFFICIALS OF THE WASHINGTON STATE AGRICULTURAL COLLEGE, WITH REGARD TO THE STARTING OF A SOIL EROSION EXPERIMENT FARM IN THAT STATE. L. A. JONES, ACCCOMPANIED BY H. H. BENNETT OF THE BUREAU OF CHEMISTRY AND SOILS, HAD PREVIOUSLY SPENT A WEEK IN THE STATE SELECTING A FARM THAT WOULD BE SUITABLE FOR THE PURPOSE. NEGOTIATIONS FOR THE FARM HAD NOT BEEN CONCLUDED AT THE TIME OF THIS ISSUE.

FROM PULLMAN MR. McCORMICK WENT TO BONNERS' FERRY, IDAHO TO LOOK OVER THE WORK BEING DONE BY MESSRS. JESSUP AND OLYDE FOR THE INTERNATIONAL JOINT COMMISSION IN CONNECTION WITH DETERMINING THE EFFECTS OF RAISING THE LEVEL OF KOOTENAI LAKE.

MR. McCORMICK THEN PROCEEDED TO BERKELEY FOR CONFERENCES WITH MR. McLAUGHLIN RELATIVE TO THE IRRIGATION WORK. HE ALSO HELD A CONFERENCE AT SACRAMENTO WITH MR. MERVINE, AND PROF. WALKER OF THE UNIVERSITY OF CALIFORNIA, RELATIVE TO THE SUGAR BEET MACHINERY PROJECT.

PROCEEDING EAST MR. McCORMICK SPENT TWO DAYS IN UTAH ON THE BEAR RIVER PROJECT OF THE BIOLOGICAL SURVEY.

HENRY GEISE ARRIVED IN WASHINGTON AUGUST 20 FOR CONFERENCES WITH REFERENCE TO THE FINAL REPORT OF HIS YEAR'S WORK ON THE STATUS OF FARM STRUCTURES RESEARCH. MR. GEISE WILL PROCEED FROM WASHINGTON TO ITHACA, N. Y. AND OTHER EASTERN POINTS FOR FURTHER CONFERENCES WITH COLLEGE OFFICIALS, AND THEN RETURN TO WASHINGTON TO COMPLETE HIS REPORT.

THE UNUSUAL DROUGHT HAS AROUSED MUCH INTEREST IN IRRIGATION IN THE EAST, PARTICULARLY AMONG APPLE GROWERS IN WEST VIRGINIA AND WESTERN MARYLAND. F. E. STAEBNER SPENT ABOUT A WEEK IN THESE AREAS ADVISING APPLE GROWERS WITH REGARD TO THEIR IRRIGATION PROBLEMS.



S. P. LYLE OF THE DEPARTMENT OF AGRICULTURAL ENGINEERING, GEORGIA STATE COLLEGE OF AGRICULTURE, HAS BEEN APPOINTED SENIOR AGRICULTURAL ENGINEER EFFECTIVE SEPTEMBER 3. HE WILL WORK ON A COOPERATIVE BASIS BETWEEN THIS BUREAU AND THE OFFICE OF COOPERATIVE EXTENSION WORK. HE WILL ACT AS A MEDIUM OF CONTACT BETWEEN THIS DIVISION, THE EXTENSION SERVICE, AND THE AGRICULTURAL ENGINEERING EXTENSION AGENCIES OF THE STATES.

DURING AUGUST GEO. R. BOYD MADE A TRIP TO MINNESOTA FOR THE PURPOSE OF CONFERRING WITH M. A. KESSLER AND INSPECTING THE PROGRESS OF THE INVESTIGATION THERE ON LAND CLEARING METHODS.

ACTIVE WORK ON THE COTTON GINNING PROJECT RECENTLY AUTHORIZED BY CONGRESS HAS BEEN STARTED. A LABORATORY WILL BE BUILT AT THE DELTA BRANCH EXPERIMENT STATION, STONEVILLE, MISS. C. A. BENNETT, FORMERLY LOCATED AT TALLULAH, LA. HAS TRANSFERRED HIS HEADQUARTERS TO STONEVILLE. IT IS HOPED TO COMPLETE THE BUILDING AND INSTALL EQUIPMENT IN TIME TO MAKE USE OF THIS YEAR'S COTTON CROP.

W. W. McLAUGHLIN AND A. T. MITCHELSON ATTENDED A CONFERENCE CALLED BY THE STATE ENGINEER OF CALIFORNIA AT LOS ANGELES, JULY 29, FOR THE PURPOSE OF COORDINATING ALL RESEARCH WORK NOW GOING ON IN CALIFORNIA AND PARTICULARLY IN THE SOUTHERN PART OF THE STATE. MR. BLANEY AND MR. MITCHELSON WERE DELEGATED TO SUBMIT TO THE STATE ENGINEER A SUMMARY OF ALL RESEARCH WORK FALLING WITHIN THEIR FIELDS OF STUDY, IN ORDER THAT DUPLICATION OF EFFORT ON THE PART OF PUBLIC AGENCIES MIGHT BE AVOIDED.

W. W. McLAUGHLIN LEFT BERKELEY FOR AN EXTENDED FIELD TRIP, VISITING THE BEAR RIVER GAME REFUGE PROJECT AND THE KOOTENAI PROJECT, AND EXPECTS TO VISIT OTHER POINTS IN THE NORTHWEST BEFORE RETURNING TO BERKELEY.

WELLS A. HUTCHINS SPENT THE LATTER PART OF JULY AND PART OF AUGUST IN SOUTHERN CALIFORNIA, OBTAINING DATA ON THE COST OF IRRIGATION WATER UNDER THE PUBLIC UTILITIES AND LARGER MUTUAL WATER COMPANIES IN THAT SECTION, FOR USE IN THE REVISION OF H. F. BLANEY'S BULLETIN ON "COST OF WATER TO IRRIGATORS IN CALIFORNIA."

M. R. LEWIS SUBMITTED A REPORT ON "PROPOSED USE OF DEEP WELLS AND PUMPS FOR THE DRAINAGE OF THE OLD OREGON TRAIL BETWEEN HAINES AND BAKER, OREGON." THE SECTION OF HIGHWAY REFERRED TO LIES IN THE BAKER VALLEY, WHERE THE WRITER, DURING THE PAST TWO YEARS, HAS BEEN CONDUCTING A STUDY OF THE GENERAL IRRIGATION AND DRAINAGE PROBLEM. THE HIGHWAY, WHICH WAS CONSTRUCTED ABOUT 10 YEARS AGO, HAS GIVEN SERIOUS TROUBLE PRACTICALLY EVERY YEAR SINCE IT WAS BUILT, DUE TO FROST HEAVING IN THE WINTER TIME, FOLLOWED BY A BREAKING UP OF THE SURFACE DURING THE SPRING THAW. THIS, HOWEVER, OCCURS ONLY IN THOSE LOCATIONS WHERE THE WATER TABLE IS CLOSE TO THE SURFACE. THE PROBLEM IS THUS EVIDENTLY CLOSELY RELATED TO THE GENERAL DRAINAGE PROBLEM IN



THE VALLEY. WHEREVER THE WATER TABLE LIES WITHIN A FEW FEET OF THE SURFACE, IT IS POSSIBLE FOR SERIOUS FROST-HEAVING TO OCCUR, BECAUSE THE WATER HELD IN THE SOIL BY CAPILLARY ACTION FREEZES IN SMALL CREVICES OR HOLES AND THE CRYSTALS WHICH START THERE ARE BUILT UP BY FURTHER WATER WHICH MOVES TOWARD THEM BY CAPILLARY ACTION. IT IS THOUGHT THAT SUCCESSFUL CORRECTION OF THE TROUBLE IN THIS AREA DEMANDS THAT THE WATER TABLE BE SO LOWERED THAT THE UPPER PORTION OF THE CAPILLARY FRINGE WILL BE BELOW THE FROST ZONE, AND THAT ANY ADDITION OF MATERIAL ON TOP OF THE PRESENT ROAD BED WILL NOT PREVENT THE FREEZING OF THE SUBGRADE AS LONG AS WATER IS AVAILABLE BY CAPILLARY RISE FROM THE WATER TABLE. TO LOWER THE WATER TABLE BEYOND CAPILLARY REACH OF THE FROST ZONE WILL REQUIRE VERY DEEP TILE OR OPEN DRAINS, AND DUE TO EXISTING CONDITIONS THE CONSTRUCTION OF GRAVITY DRAINS OF THE REQUIRED DEPTH WOULD BE EXTREMELY EXPENSIVE. EXPERIENCE IN OTHER REGIONS HAS SHOWN THAT GRAVITY DRAINS ARE NOT ALWAYS SUCCESSFUL IN LOWERING A HIGH WATER TABLE. EXPERIENCE HAS ALSO SHOWN THAT THE WATER TABLE MAY BE LOWERED TO ANY DESIRABLE DEPTH BY MEANS OF DEEP WELLS AND PUMPS. IT SEEMS PROBABLE, THEREFORE, THAT SIMILAR RESULTS COULD BE SECURED IN THE BAKER VALLEY. THE INITIAL COST OF DEEP DRAINAGE BY MEANS OF PUMPS AND WELLS HAS PROVEN TO BE VERY MUCH LESS THAN THAT OF GRAVITY DRAINS AND WHEREVER THE WATER IS IN DEMAND FOR IRRIGATION PURPOSES THE VALUE OF THE WATER WILL TAKE CARE OF THE COST OF PUMPING. IT IS PROPOSED THAT THE STATE HIGHWAY COMMISSION COOPERATE WITH OWNERS OF ADJACENT LAND IN INSTALLING WELLS FOR THE DUAL PURPOSE OF FURNISHING DRAINAGE FOR THE HIGHWAY AND, INCIDENTALLY, OF THE ADJOINING LAND, AND OF PROVIDING SUPPLEMENTARY IRRIGATION WATER FOR SUCH ADJOINING LAND.

HENRY O. HILL WAS APPOINTED TO THE POSITION OF JUNIOR CIVIL ENGINEER EFFECTIVE AUGUST 1 AND REPORTED FOR DUTY AT GUTHRIE, OKLA. WHERE HE WILL BE EMPLOYED ON THE SOIL EROSION EXPERIMENTAL FARM NEAR GUTHRIE.

RAYMOND R. DRAKE REPORTS THAT THE EFFECT OF SUBSOILING EXPERIMENTS WAS TO INCREASE YIELDS FROM 1 TO 2 BUSHELS PER ACRE ON THE HAYS SOIL EROSION EXPERIMENTAL FARM. IT IS DESIRED TO RUN THESE EXPERIMENTS OVER A PERIOD OF SEVERAL YEARS TO DETERMINE THE AVERAGE EFFECT OF SUBSOILING UNDER DIFFERENT RAINFALL AND MOISTURE CONDITIONS. HE ALSO REPORTS THAT A YIELD OF 46.2 BUSHELS OF BARLEY PER ACRE WAS OBTAINED NEAR THE FOOT OF A SLOPE WHERE VERY LITTLE EROSION HAD OCCURRED AS COMPARED WITH 23.3 BUSHELS OF BARLEY PER ACRE JUST ABOVE ON THE SAME SLOPE WHERE CONSIDERABLE EROSION HAD OCCURRED AND THE SOIL HAD BEEN WASHED DOWN TO THE FOOT OF THE SLOPE.

R. W. BAIRD HAS COMPLETED THE CONSTRUCTION OF 95 BRUSH DAMS AND 5 POLE DAMS IN GULLIES ON THE TYLER FARM. THE DAMS RANGE IN HEIGHT FROM 1 TO 5 FEET AND IN WIDTH FROM 2 TO 15 FEET. THE TIME TO CONSTRUCT THESE DAMS RANGE FROM 6.2 TO 36.7 MAN HOURS.



COMPUTATIONS HAVE BEEN MADE TO DETERMINE THE MAXIMUM RATES OF RAINFALL AND RUN-OFF FROM TERRACES ON THE GUTHRIE SOIL EROSION EXPERIMENTAL FARM WHERE PARSHALL MEASURING FLUMES HAVE BEEN INSTALLED. THIS EXPERIMENT CONSISTS OF 6 TERRACES WITH A UNIFORM FALL OF 4 INCHES PER 100 FEET, WITH A VERTICAL INTERVAL OF 2,  $3\frac{1}{2}$  AND 5 FEET AND A LENGTH OF 700 FEET. THESE TERRACES ARE LOCATED ON VIRGIN LAND. FOR THE RAINFALL WHICH OCCURRED ON MAY 3, 1930, THE MAXIMUM RATES OF RUN-OFF IN INCHES PER HOUR FOR THE DIFFERENT TERRACES VARIED FROM 4.33 INCHES PER HOUR FOR A TERRACE WITH A 5 FOOT VERTICAL INTERVAL TO 5.18 INCHES FOR A TERRACE WITH A 2 FOOT VERTICAL INTERVAL. THE RATES OF RAINFALL WHICH PRODUCED THE MAXIMUM RATES OF RUN-OFF WERE 6.46 INCHES PER HOUR FOR A PERIOD OF 5 MINUTES, 5.3 INCHES PER HOUR FOR A PERIOD OF 10 MINUTES AND 5.07 INCHES PER HOUR FOR A PERIOD OF 15 MINUTES.

CLAUDE K. SHEDD REPORTS THE COMPLETION OF A LARGE SOIL SAVING DAM WITH A VERTICAL INLET AND A 36 INCH CORRUGATED STEEL PIPE THROUGH THE DAM IN ONE OF THE LARGE GULLIES ON THE BETHANY SOIL EROSION EXPERIMENTAL FARM. THE LENGTH OF THE CORRUGATED STEEL PIPE IS 50 FEET AND THE SIDE SLOPES OF THE DAM ARE 2 TO 1. THE TOP OF THE DAM IS ABOUT 14.5 FEET ABOVE THE BOTTOM OF THE GULLY AND A ROADWAY 12 FEET WIDE IS PROVIDED ALONG THE TOP. THE QUANTITY OF EARTH WORK IN THIS DAM AS COMPUTED FROM CROSS SECTIONS IS 571 CUBIC YARDS. THE COST OF THE EARTH WORK WAS 33 CENTS PER CUBIC YARD. THE TOTAL COST OF THE DAM WAS \$441.10.

ROBERT A. NORTON REPORTS THAT SINCE JUNE 15 THERE HAS BEEN ONLY 0.30 INCH OF RAINFALL RECORDED AT THE TEMPLE EXPERIMENTAL FARM. THIS HAS RESULTED IN EARLY MATURING OF CORN SO THAT GATHERING OF THIS CROP WILL BE STARTED SHORTLY AFTER THE MIDDLE OF THE CURRENT MONTH. THE DRY WEATHER HAS CURTAILED THE COTTON GROWTH SOMEWHAT BUT IT HAS ALSO PREVENTED THE SPREAD OF COTTON ROOT ROT, AND THIS DISEASE IS MUCH LESS PREVALENT ON THE FARM THAN IT WAS AT THIS TIME LAST YEAR.

R. B. GRAY LEFT TOLEDO AUGUST 3 FOR A TRIP THROUGH THE EASTERN CORN BORER AREA. HE STOPPED AT ITHACA, N. Y. TO CONFER WITH MR. RILEY AND OTHERS IN REGARD TO CORN MACHINERY DEMONSTRATIONS IN NEW YORK. HE ALSO CONFERRED WITH L. H. WORTHLEY AND PROF. C. O. REED IN BOSTON REGARDING MATTERS PERTAINING TO THE MACHINERY PROGRAM IN NEW ENGLAND. SOME TIME WAS ALSO SPENT WITH FRANK IRONS AT WILLIMANTIC, CONN.

A. L. SHARP, OF THE TOLEDO OFFICE, AND THAYER CLEAVER, ON COOPERATIVE WORK AT THE UNIVERSITY OF ILLINOIS, HAVE BEEN ATTENDING MILITARY TRAINING CAMP.

FRANK IRONS RETURNED TO TOLEDO AUGUST 14 FROM THE NEW ENGLAND STATES WHERE HE HAS BEEN MAKING A STUDY OF FARMING CONDITIONS AND PRACTICES IN PREPARATION FOR FURTHER DEVELOPMENT WORK IN CORN BORER CONTROL MACHINERY FOR THAT AREA.

G. E. RYERSON DEMONSTRATED A CORN BINDER WITH STATIONARY-KNIFE, LOW-CUTTING ATTACHMENT, BEFORE A GROUP OF COUNTY AGENTS AT HARBOR CREEK, PA. ON AUGUST 9.

